ECONOMIC EFFECTS OF STATE PARK RECREATION IN PENNSYLVANIA

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The economic effects resulting from the use and operation of Pennsylvania's state park system were analyzed with an input-output model of the state's economy. Direct expenditures by park users and park operations were estimated at $263 million for the 1987 study year. Secondary effects, stemming from interindustry trade and recreation-related employment, provided an additional $299 million in total sales.

Introduction

The current attention placed upon travel and tourism as a source of economic development parallels the increasing importance of service industries within the U. S. economy. Our nation's dependence on educational, financial, healthcare, housing, and recreational services was underscored during the 1986-1989 period, when over half of the gross national product was attributed to the consumption of these services (U.S. Bureau of Economic Analysis 1989).

Documenting the total value of recreation-related expenditures is a difficult assignment. Existing measures of output from such sectors as lodging and food services do not differentiate recreation from business-related trade. Similar problems arise when attempting to measure recreation-related expenditures within the transportation, retail, and manufacturing sectors.

Improved estimates of recreational expenditures have been obtained from studies addressing the actual consumption patterns of particular user groups (Mittleider and Leitch 1984, Donnelly and Nelson 1986). These investigations have typically involved direct survey methods to identify the expenditure and demographic characteristics of various user groups. As a further extension of this work, recreational expenditures have been entered into regional input-output models to determine the subsequent value of interindustry trade generated by the initial expenditures and the added household consumption originating from recreation-supported employment (Alward and Lofting 1985, Fritschen 1989).

In an effort to measure the financial effects of state park recreation within Pennsylvania's economy, a cooperative research effort was initiated between the Pennsylvania Department of Environmental Resources and Penn State's School of Forest Resources. Two basic objectives were involved: (1) to determine the expenditure and demographic characteristics of state park users and (2) to evaluate the total economic effects of park-related expenditures within the state's economy. An earlier paper presented the details of the survey methodology and the expenditure profiles of state park users (Strauss and Lord 1990). The following paper focuses on the demographics of park users and the total economic effects of park-related expenditures within the state.

The State Park Setting

Pennsylvania's state park system includes 114 parks and is distributed uniformly throughout the Commonwealth. The size and distribution are credited to the early history of state park development, coupled with a general state mandate to provide increased public access to recreational areas (Forrey 1984). Over the past three decades, a combination of state and federal funds was used to more than double the size of the state park system.

Operational costs have also increased, with $36 million required in 1987 to operate and maintain the system. Renovation of many of the older parks, coupled with the first cycle of major maintenance in the relatively newer parks has placed an increased cost burden on the overall system.

State parks also serve an economic purpose within their immediate regions through the employ of local resources and the generation of expenditures by park users. This particular attribute of state parks is poorly defined and has received little attention in the past. In an effort to correct this oversight and to identify the financial role of state parks within Pennsylvania's economy, the following project was established with Penn State's School of Forest Resources.

Procedures

The initial stage of research was directed to obtaining information on the expenditures and demographics of park users. A controlled sampling design was used in conducting over 7000 visitor interviews at 30 state parks during the 1985, 1986, and 1987 summer seasons. Park audiences were stratified on the basis of six major activities: camping, picnicking, swimming, fishing, boating, and hiking. Typically, these activities attract over 80 percent of annual park attendance on a statewide basis. Details on the study procedures and expenditures patterns of various activity groups were previously reported (Strauss and Lord 1990). The second stage of work, initiated in 1989, analyzed the economic effects of park-related expenditures within Pennsylvania for the 1987 study year.

The economic effect of park user and agency expenditures was analyzed with a computerized, input-output model of the state's economy. The Pennsylvania model was generated from the Impact Analysis for Planning (IMPLAN) System, organized by the USDA Forest Service for the national economy (USDA Forest Service 1985). The Pennsylvania IMPLAN model identified the network of trade relationships between business, government, and household sectors. More than 500 individual sectors are described in terms of production, employment, and the between the sectors. IMPLAN also enumerates the economic functions necessary for balancing production, consumption, and the import and export of goods and services during a given period. On the downside, the model is dependent on 1982 data, with many of the state's production and trade relationships based on national averages for the same period.

In using the IMPLAN model, user and state expenditures were deflated to 1982-equivalent values and entered as direct payments to the primary sectors receiving this money. Since the park system largely serves a resident population and with Pennsylvania representing a major-sized geographic region, the analysis of economic impacts, or effects, was not limited to the inflow of nonresident expenditures. Rather, the analysis considered all in-state expenditures made by the total park audience and the agency itself in estimating the subsequent cycles of secondary effects resulting from these payments.

Secondary effects included the indirect business trade from sectors providing inputs to the primary sectors and the related chain of interindustry trade generated by this process. Additional secondary effects were identified in terms of the consumer expenditures induced by the salaries and wages earned from the direct and indirect business activities. All secondary effects were inflated back to 1987-equivalent values.

Results

Demographics of State Parks Users

State park users were characteristically young, family-oriented people with moderate-level incomes. Their average age was 32 years. Fifty-five percent were male and 45 percent female, with nearly 60 percent of the park usage identified with family groups. Average annual family income approached $28,000.

Age distributions indicated that nearly one fourth of the park users were under 15 years old (Figure 1). Another 9 percent were teenagers in the 15- to 19-year class. Persons 20 to 39 years of age represented over one-third of the total audience. Middle-aged persons, 40 to 59 years of age, represented 22 percent of park use, with persons over 60 years contributing 9 percent of use.

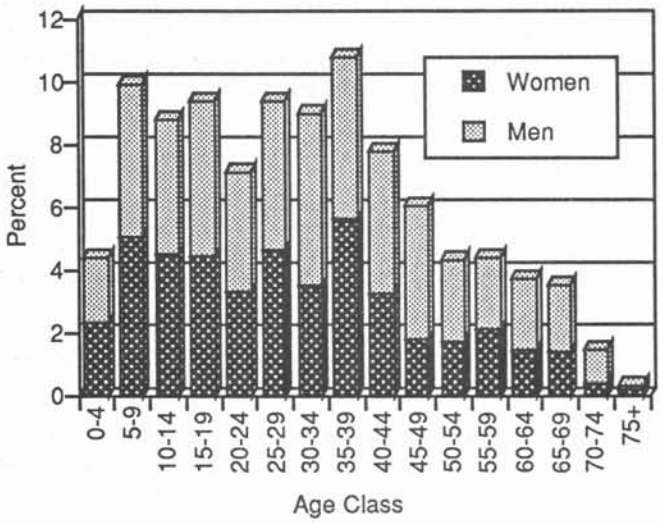

Figure 1. Distribution of state park users by age and gender.

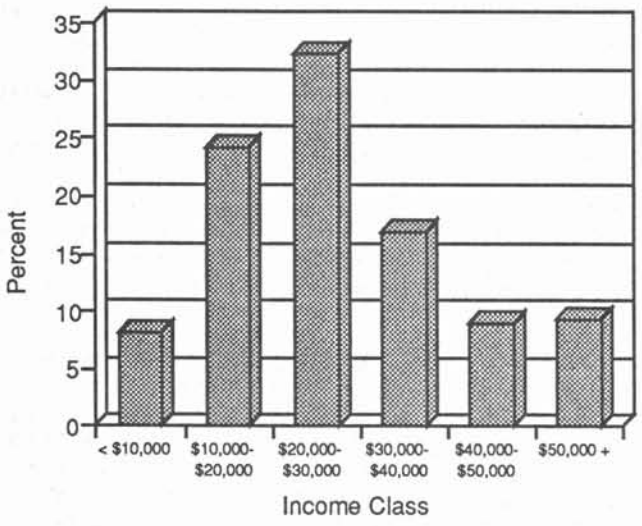

Figure 2. Distribution of respondents by family income.

Park usage was greatest among low- to moderate-income families, with 65 percent of the attendance tied to individuals having annual family incomes under $30,000 (Figure 2). Twenty-six percent of the park users were in the family income brackets of $30,000 to $50,000 per year.

Forty percent of those interviewed had post-high school educations, with another 56 percent having high school or technical school degrees. Paralleling these results, 35 percent of the respondents were employed in blue collar occupations, with nearly the same percentage employed in white collar jobs. Fifteen percent of those interviewed were retired.

Day use activities provided the major recreational focus at state parks during 1987. In total, day use activities accounted for 95 percent of annual attendance, with picnicking, swimming, and hiking representing the more popular recreational pursuits (Strauss and Lord 1990).

Most park users lived near the parks where they were interviewed. One-fourth of the users were within a 20-minute drive of the park and over three-quarters were within 40 minutes of the park. Twenty percent of the audience traveled over an hour to reach their park destinations.

User Expenditures

Activity costs included the specific charges for activity-related items and the prorated costs of equipment and such general expenses as food, lodging, and travel. Equipment costs represented the major recreational items purchased over the past year and used at a state park location. These expenditures were proportioned specific to state park usage and averaged among all park users. General recreational expenses were also prorated in terms of the time spent in state parks and in particular activities. Costs were identified on an activity day basis, representing an individual's cost of pursuing a given activity over some portion of a day's visit.

The six activities fell into two cost ranges (Figure 3). Swimming, hiking, picnicking, and fishing were in a moderate cost range, averaging $5 to $9 per activity day. Over 85 percent of these expenditures were directed to general and activity-related items, with less than 15 percent involved in equipment. Camping and boating were more expensive, averaging $20 and $26, respectively, per activity day. Most of their increase was for equipment costs.

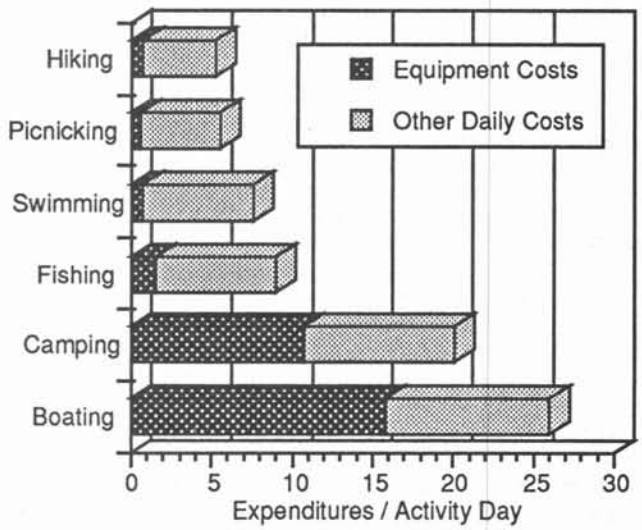

Figure 3. Expenditures per activity day by activity.

Total Expenditures

Total user expenditures were developed by multiplying the average activity costs by respective annual attendances and summing over all parks and all activities. Expenditures for non-surveyed activities were estimated from auxiliary studies. Total user expenditures for the 1987 calendar year were estimated at $250 million.

Food and food-related services were the largest cost item, amounting to 32 percent of total user expenditures. Equipment purchases nearly matched food costs, for another 32 percent of the total. Transportation costs, measured on the basis of fuel purchases and minor vehicle repairs, accounted for 14 percent of the total. Activity-related items, involving expendable recreational supplies and fuel for boating and fishing, constituted another 9 percent of the total. Lodging and incidental trip costs were the final 13 percent of expenditures.

The cost of operating, maintaining, and developing state parks during 1987 was obtained from Department of Environmental Resources records. Total expenditures from all sources amounted to $36 million, with 95 percent used in the operation and maintenance of existing park facilities and the remainder directed to the construction of new facilities. On the basis of key inputs, 65 percent of the expenditures went to the employ of state personnel, 19 percent to contract services, and 16 percent for park supplies and utilities.

Economic Effects to Pennsylvania

The economic effect of state park recreation within Pennsylvania, as determined from IMPLAN model analysis, was $562 million in total sales. This included in-state expenditures of $263 million from park users and park operations and secondary demands of $299 million from interindustry trade and recreation-based employment (Table 1).

In-state expenditures by park users were $241 million, and for park operations, $22 million.

Principal sectors receiving the $263 million in direct expenditures were manufacturing (41 percent), service industries (27 percent), and wholesale and retail trades (21 percent) (Table 1). Most of the manufacturing sales was tied to recreational equipment and apparel, food products, and transportation fuels. Service industries benefited from the trade realized in food services, lodging, and associated recreational services (e.g. photo processing). The wholesale and retail sector participated in the direct expenditures process on the basis of retail food and recreational product sales.

As a result of the direct expenditures, secondary effects were generated through inter-industry trade and employment-based demands in the amount of $299 million. The major sectors participating in these secondary effects were manufacturing (25 percent of secondary sales); finance, insurance, and real estate (24 percent); and service industries (24 percent) (Table 1). Manufacturing again played a prominent role on the basis of goods sold to other production sectors and to the household sector. Finance, insurance, and real estate participated in the secondary process through the banking services and real estate sales provided to the household and business sectors. Secondary demands within the service sector included health care, food services, and other domestic services.

The $562 million in total sales showed a value added to production of $262 million (Table 1). Value added represented the amount of total sales directed to wages and salaries, interest payments, taxes, d epreciation, and profit. Sectors with a high ratio of value added to total sales were typically labor-intensive and service-oriented industries. These included wholesale and retail trades, the finance, insurance and real estate group, and the service industries. Two social measures of this economic process were the employment income and the number of jobs originating from total sales. Nearly 27 percent of total sales was directed to employment income, amounting to $154 million (Table 1). In turn, almost 10,000 jobs were credited to this recreation-based demand. Sectors having the highest levels of employee income and jobs were the service industries, manufacturing, and wholesale and retail trades. Further employment was also credited to the Bureau of State Parks in terms of 640 full-time positions and 950 seasonal jobs, representing an annual equivalent of nearly 880 positions within the agency.

Table 1. Economic effects of state park recreation in Pennsylvania.

Sectors	Direct Sales	Second Sales	Total Sales
	---------- ($ millions) ----------		
Agriculture	2.5	13.2	15.7
Construction	1.9	10.9	12.8
Manufacturing	108.0	75.3	183.3
Transport. Commun. and Utilities	6.9	29.0	35.9
Wls. & Rtl.Trade	54.2	19.8	74.0
Fin., Ins. and R. Est.	3.9	72.9	76.8
Services	71.8	71.8	143.6
Government	13.7	5.1	18.8
Other Sectors	.0	.8	.8
Total	262	9 298.8	561.7

	Value Added	Employee Income	Employ
	-----($ millions)-----		(jobs)
Agriculture	4.4	1.4	223
Construction	5.8	5.3	175
Manufacturing	47.6	38.5	1,693
Transport. Commun. and Utilities	13.6	8.1	256
Wls. & Rtl. Trade	52.9	33.7	3,634
Fin., Ins. and R. Est.	54.8	11.2	487
Services	74.7	50.2	3,220
Government	8.0	5.5	282
Other Sectors	.6	.4	28
Total	262.4	154.3	9,998

Discussion

Although outdoor recreation is often characterized as a cyclical and largely service-oriented industry, the IMPLAN analysis of park-related expenditures showed a broader economic involvement with a composite of industrial sectors. Nearly 41 percent of the direct expenditures went to the manufacturing sector, with 27 percent channeled to the service industries sector and another 21 percent to wholesale and retail trades. Secondary effects of these direct expenditures showed a further involvement with the manufacturing, financial, and service sectors.

Overall, park-related expenditures created a wide array of economic benefits on a sector-by-sector basis and, in all probability, represented an economic process not confined to any particular season. Results from this study suggest that the business process may involve substantial lead time in preparing for this recreational market and may also create certain lagged effects in terms of secondary expenditures. For example, although 76 percent of the direct expenditures was associated with the "summer recreational season", nearly 30 percent of this amount was for equipment purchased over the previous year. In addition, food products, recreational equipment, and apparel would require a certain lead time in their manufacture and distribution. Finally, the secondary effects realized by other supporting industries and from induced consumer demands would involve a continuing span of time.

Summary

Implications to Park Management

State park users are largely a family-oriented audience, have moderate-level incomes, and live within close proximity of state parks. Most of their recreational expenditures were tied to food and food services, recreational equipment, and transportation. In turn, these monies were channeled into the manufacturing industries, the service sector and the wholesale and retail trades. All told, expenditures tied to the use and operation of state parks resulted in total economic effects of $562 million within the state. Total industrial employment attributed to park expenditures represented 10,000 industrial jobs and an additional 880 positions within the Bureau of State Parks.

These economic results can be largely credited to the statewide system of 114 parks, with the operation and maintenance of the system representing a certain catalyst to the overall process. During 1987, the $36 million in park operations led to a fifteen-fold increase in economic activity throughout the state. Pennsylvania's park system is an established recreational entity that provides three basic types of benefits to our society. First, they meet the recreational needs of the public in terms of a diverse set of activities and park locations. Second, they represent ecological reserves that contribute to the maintenance of a healthy environment. Third, they support a substantial volume of economic activity. The challenge presented to park management is sustaining this unique set of natural resources for future generations while continuing to meet the public need for recreational opportunities. As an ancillary feature of this system, the public's pursuit of outdoor recreation will continue to contribute to our state's economy.

Acknowledgement

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